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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,841	12/07/2000	William L. Betts	061607-1330	2445

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EXAMINER	
BAYARD, EMMANUEL	

ART UNIT	PAPER NUMBER
2631	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/733,841	BETTS, WILLIAM L.	
	Examiner	Art Unit	
	Emmanuel Bayard	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura U.S. Patent NO 6,674,768 B1 in view of Drucker et al U.S. Patent No 6,243 414 B1.

As per claim 1, Okumara et al discloses an apparatus for equalizing a discrete multi-tone transmit spectrum comprising: a DMT transmitter configured to generate a plurality of DMT carries tones into a transmit symbol (see fig.5 element 23a and col.16, lines 1-10); a discrete Fourier transform element configured to separate the transmit symbol into the plurality of carriers tones (see fig.5 element 29a and col.2, lines 57-58); a gain adjustment element configured to adjust each of the plurality of carriers tones based on a predetermined transmit signal spectrum (see fig.5 element 28a and col.2, lines 54-55 and col.3, lines 15-19).

However Okumara et al does teach combining the plurality of carriers tones and an amplifier configured to detect the transmit symbol.

Drucker et al teaches combining the plurality of carriers tones and an amplifier configured to detect the transmit symbol (see abstract and col.6, lines 30-37).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Drucker into Okumara as to generate a SNR sufficient together to carry, at the desired BER, the number of bits being carried by the repeated tone as taught by Drucker (see abstract).

As per claim 2, Okumara does include independently adjusting each carrier (see col.15, lines 3-10).

As per claim 3, Okumara does include power measurement and gain scalar (see fig.5 element 26a, 27a and fig.9 element 9).

As per claim 4, Drucker et al teach an amplifier. Furthermore implementing such teaching to monitor local line conditions into Okumara would have been obvious to one skilled in the art as to generate a SNR sufficient together to carry at the desired BER.

As per claims 5 and 6, Okumara teaches a start-up sequence (see col.12, lines 45-47). Furthermore implementing such teaching to transmit symbol prior or after the start-up sequence would have been obvious to one skill in the art as accurately determine the bit/gain distribution process.

As per claims 7 and 8, Okumara does teach encoding the DMT carrier tones in a constellation (see col.4, lines 33). Furthermore implementing such teaching into a square or circular constellation would have been obvious to one skilled in the art as to control the data rate of the interleave data and supplies the interleave to the tone ordering section.

As per claims 9, 17 and 25, Okumara discloses a method or apparatus for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising: generating a plurality of DMT carrier tones ; (see fig.5 element 23a and col.16, lines 1-10); a DMT is equivalent to the claimed (separating the transmit symbol into the plurality of carrier tones) (see fig.5 element 29a and col.2, lines 57-58); adjusting each of the plurality of carrier tones based on a predefined transmit signal spectrum (see fig.5 element 28a and col.2, lines 54-55 and col.3, lines 15-19).

However Okumara et al does teach combining the plurality of carriers tones and an amplifier configured to detect the transmit symbol.

Drucker et al teaches combining the plurality of carriers tones and an amplifier is considered as the claimed detecting the transmit symbol (see abstract and col.6, lines 30-37).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Drucker into Okumara as to generate a SNR sufficient together to carry, at the desired BER, the number of bits being carried by the repeated tone as taught by Drucker (see abstract).

As per claims 10 and 18, Okumara does teach calculating a power level for each of the tones (see fig.5 element 26a and col.2, line 53 and adjusting the power level of each tone to match the predetermined power level (see fig.5 element 27a). Furthermore implementing a step of comparing the power level of each tone with a predetermined power level into Okumara would have been obvious to one skill in the art as to reduce noise and interference in the carrier tone signals.

As per claims 11 and 19, Okumara does teach gain scalars (see fig.9 element 9).

As per claims 12 and 20, Okumara would have taught a step of monitoring a communication line to detect impedance variations, where the adjusting step is responsive to the impedance variations as to accurately reduce noise and symbols interference in the carrier tones.

As per claims 13, 14, 21 and 22, Okumara teaches a start-up sequence (see col.12, lines 45-47). Furthermore implementing such teaching to transmit symbol prior or after the start-up sequence would have been obvious to one skill in the art as accurately determine the bit/gain distribution process.

As per claims 15, 16, 23 and 24, Okumara does teach encoding the DMT carrier tones in a constellation (see col.4, lines 33). Furthermore implementing such teaching into a square or circular constellation would have been obvious to one skilled in the art as to control the data rate of the interleave data and supplies the interleave to the tone ordering section.

As per claim 26, Okumara does teach a quadrature amplitude modulation (QAM) modulated single carrier (see col.1, lines 29-35).

As per claim 27, Okumara would have taught a carrier less 2 amplitude/phase (CAP) modulated single carrier device as to accurately determine the gain distribution of the carrier tones.

As per claim 28, Okumara does teach adjusting a power level associated with each of the plurality of frequencies based on a predefined transmit signal spectrum (see fig.5 element 26a). Furthermore implementing such teaching to comprises a finite impulse response filter would have been obvious to one skilled in the art as accurately reduce noise and interference in the carrier tones.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chun U.S. patent No 6,307,889.

Isaksson et al U.S. Patent No 6,320,903 B1.

Hwang U.S. Patent nO 6,498,807 B1.

Wu U.S. Patent No 6,389,062.

May et al U.S. Patent NO 5,835,536.

Schenk U.S. Patent no 6,529,925 B1.

Laroia et al US 2001/0036233 A1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is (703) 308-9573. The examiner can normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour , can be reached on (703) 306-3034. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Emmanuel Bayard

Primary Examiner

2/2/04